Space Weather Forecast

Issued on Sunday, 30 June 2024 at 01:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares throughout. Chance of G1/Minor Storm intervals Day 1 (30 Jun).

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low, with multiple low-level Common-class flares. There are currently sixteen regions on the disc, most of which are small and simple. The largest regions are on the southwest quadrant and on the eastern central part. A relatively new region has continued to rotate into view around the eastern limb, and has been the most active region of the period. It appears to be a large and perhaps complex region, and will continue to be monitored.

A large filament (raised arc of plasma) was observed lifting off from the Suns surface around 29/1530 UTC, with a subsequent Coronal Mass Ejection (CME) also observed in coronagraph imagery. An initial assessment suggests this could give Earth a glancing blow early on Day 4 (03 Jul), but further imagery is awaited for a complete analysis.

Solar Wind / Geomagnetic Activity: Solar winds have declined since the arrival of a CME on 28 Jun. The solar wind speed has remained slightly elevated, recently settling around 400-430 km/s. The Interplanetary Magnetic Field (IMF) has been moderate to weak. The important north-south component has been generally quite variable, but has seen some moderate southward deflections at times. Geomagnetic activity has been Quiet to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Low activity is expected with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: Effects of the CME arrival on 28 Jun have continued to wane. There remains the possibility for further glancing CME arrivals on Day 1 (30 Jun), however confidence is low with uncertainties in timing and positioning of these. A large filament liftoff and subsequent CME were observed in imagery from around 29/1530 UTC. An initial assessment of this CME suggests a glancing blow early on Day 4 (03 Jul), with the bulk of the ejecta expected to pass below Earths orbit. Further imagery is awaited for a more thorough analysis to take place.

Geomagnetic activity is expected to be generally Quiet to Unsettled (Kp1-3), with a chance of Active to G1/Minor storm intervals (Kp4-5) on Day 1 (30 Jun) should the expected glancing CME blow materialise, however confidence remains low. Conditions are then expected to become largely Quiet from Day 2 (01 Jul) onwards, with perhaps another enhancement into Day 4 (03 Jul) with another CME glance.

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels, but with a very slight chance of exceeding the S1/Minor Storm threshold should any notable flares occur from the numerous sunspots that currently occupy the visible disc.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	5	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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